CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-09-11-10** **Date: 13-09-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Construction of Hospital Building in Ward No.02
Agency	:	Sri.K.Gopireddy, #3, 1st cross, 1st main, Ramachandrappa Layout, Veerannapalya, Arabic College Post, Bangalore-560 045.
Customer's Reference	:	EE(Project)/Ynk Zone/WO/56/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-09-17
Sample ID No	:	2017-09-11-10-01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	12-09-17

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.33	–
2	Finess by Air permeablity method (m^2/kg, Min)	278.2	225m^2/kg, Min
3	Density (gm/cc)	3.12	–
4	Standard Consistency (%)	27.5%	Not specified
5	Initial Setting time	155 minutes	Not less than 30 minutes
6	Final Setting time	268 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1mm	Not more than 10 mm

Note:

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All information furnished by Customer/Representative

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CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-09-11-10** **Date: 10-10-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Construction of Hospital Building in Ward No.02
Agency	:	Sri.K.Gopireddy, #3, 1st cross, 1st main, Ramachandrappa Layout, Veerannapalya, Arabic College Post, Bangalore-560 045.
Customer's Reference	:	EE(Project)/Ynk Zone/WO/56/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-09-17
Sample ID No	:	2017-09-11-10-01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	12-09-17

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	27.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	38.5N/mm^2	Not less than 37 N/mm^2
3	28 Days	54.5N/mm^2	Not less than 53 N/mm^2

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CP/TF/01

TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-09-13-04** **Date: 16-09-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Construction of Hospital Building in Ward No.02
Agency	:	Sri.K.Gopireddy, #3, 1st cross, 1st main, Ramachandrappa Layout, Veerannapalya, Arabic College Post, Bangalore-560 045.
Customer's Reference	:	EE(Project)/Ynk Zone/WO/56/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	13-09-17
Sample ID No	:	2017-09-13-04-01(a)
Sample Type/Size	:	Solid concrete blocks of size (400X150X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex - C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	13-09-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	401	150	201	12090	24.100	1993.4	2052.0	Not less than 1800Kg/m^3
2	400	151	201	12140	24.600	2026.3		
3	401	150	200	12030	25.700	2136.3		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	28.500	27.400	4.01	4.19	Shall not be more than 10% by mass
2	27.900	26.750	4.30		
3	27.650	26.520	4.26		

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Lab ID : **CP-2017-09-13-04** **Date: 16-09-17**

Sample ID No : **2017-09-13-04-01(a)**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	401	152	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	402	150	201	
3	400	150	201	
4	400	151	202	
5	401	152	202	
6	400	152	201	
7	400	153	200	
8	401	151	200	
9	403	154	201	
10	402	152	201	
11	402	151	200	
12	402	152	201	
13	401	151	200	
14	401	153	200	
15	401	154	201	
16	400	152	200	
17	400	150	201	
18	402	150	200	
19	402	151	201	
20	403	151	200	
Average of 20	**401**	**152**	**201**	

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Lab ID : CP-2017-09-13-04 **Date: 16-09-17**

Sample ID No : 2017-09-13-04-01(a)

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	401	152	60952	301.5	4.9	5.0
2	402	150	60300	310.5	5.1	
3	400	150	60000	300.2	5.0	
4	400	151	60400	298.5	4.9	
5	401	152	60952	312.5	5.1	
6	400	152	60800	299.4	4.9	
7	400	153	61200	285.2	4.7	
8	401	151	60551	299.1	4.9	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

Note:
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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2017-09-13-04** **Date: 16-09-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Construction of Hospital Building in Ward No.02
Agency	:	Sri.K.Gopireddy, #3, 1st cross, 1st main, Ramachandrappa Layout, Veerannapalya, Arabic College Post, Bangalore-560 045.
Customer's Reference	:	EE(Project)/Ynk Zone/WO/56/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	13-09-17
Sample ID No	:	2017-09-13-04-01(a)
Sample Type/Size	:	Solid concrete blocks of size (400X100X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	13-09-17

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	401	100	200	8020	17.600	2194.5	2145.3	Not less than 1800Kg/m^3
2	400	101	200	8080	17.400	2153.5		
3	401	102	202	8262	17.250	2087.8		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	18.500	17.750	4.23	4.26	Shall not be more than 10% by mass
2	18.600	17.860	4.14		
3	18.950	18.150	4.41		

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Lab ID : **CP-2017-09-13-04** **Date: 16-09-17**

Sample ID No : **2017-09-13-04-01(a)**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	403	102	200	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	402	100	201	
3	401	100	201	
4	400	102	202	
5	400	101	202	
6	401	100	201	
7	401	101	200	
8	402	101	200	
9	402	101	201	
10	400	100	201	
11	401	103	200	
12	400	102	201	
13	401	101	200	
14	402	100	200	
15	401	100	201	
16	400	100	200	
17	402	100	201	
18	401	104	200	
19	404	102	201	
20	403	101	200	
Average of 20	**401**	**101**	**201**	

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Lab ID : **CP-2017-09-13-04** **Date: 16-09-17**

Sample ID No : 2017-09-13-04-01(a)

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	403	102	41106	200.6	4.9	4.7
2	402	100	40200	198.5	4.9	
3	401	100	40100	190.5	4.8	
4	400	102	40800	191.5	4.7	
5	400	101	40400	186.5	4.6	
6	401	100	40100	185.2	4.6	
7	401	101	40501	180.1	4.4	
8	402	101	40602	191.4	4.7	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	**Minimum average**	**Minimum Individual units.**
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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TEST REPORT OF PHYSICAL REQUIREMENTS OF BRICKS

Lab ID	:	**CP-2017-09-13-04** **Date: 19-09-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Construction of Hospital Building in Ward No.02
Agency	:	Sri.K.Gopireddy, #3, 1st cross, 1st main, Ramachandrappa Layout, Veerannapalya, Arabic College Post, Bangalore-560 045.
Customer's Reference	:	EE(Project)/Ynk Zone/WO/56/2017-18
Source of sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	13-09-17
Sample ID No	:	2017-09-13-04/02
Identification Mark on Brick	:	Non Modular Bricks
Reference to BIS codes	:	IS 1077 : 1992(RA 2011) Common Burnt Clay Building Bricks-Specification IS 3495 (Part 1 to 3) : 1992(RA 2011) Method of Tests Burnt Clay Building Bricks Part 1:Determination of Compressive Strength, (Cl 4.2.3) Part 2:Determination of Water Absorption,(Cl 4.1.3) Part 3: Determination of Efflorescence, (Cl 4)
Date of test	:	13-09-17

COMPRESSIVE STRENGTH

Sl.No.	Length (mm)	Breadth (mm)	Area (mm^2)	Failure Load (KN)	Compressive strength of individual bricks (N/mm^2)	Acceptablity as per IS 1077:1992, Clause 7.1
1	227.68	109.37	24901	204.1	8.2	The bricks shall have a minimum average compressive strength for various classes as given in Table 1 of IS 1077: 1992. The compressive strength of any individual bricks shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than 15%.
2	225.89	108.36	24477	201.6	8.2	
3	226.62	107.35	24328	204.2	8.4	
4	227.49	108.62	24710	200.3	8.1	
5	228.35	107.88	24634	198.4	8.1	
Average of 5 bricks					**8.2**	

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Lab ID : **CP-2017-09-13-04** **Date: 19-09-17**

Sample ID No : **2017-09-13-04/02**

WATER ABSORPTION:

Sl.No.	Dry Weight	Wet Weight	Water Absorption(%)	Acceptablity as per IS 1077:1992, Clause 7.2
1	2.957	3.295	11.4	The water Absorption of bricks shall not be more than 20% by weight upto class 12.5 and 15% by weight for higher classes.
2	2.645	2.876	8.7	
3	2.903	3.196	10.1	
4	2.758	2.995	8.6	
5	2.948	3.218	9.2	
Average Water Absorption(%)			9.6	

EFFLORESCENCE:

Sl.No.	Length (mm)	Breadth (mm)	Area (mm^2)	Efflorescence	Acceptablity as per IS 1077:1992, Clause 7.3
1	229.35	107.48	24651	Moderate	The efflorescence shall not be more than 'moderate" upto class 12.5 and "slight" for higer classes.
2	228.27	109.72	25046	Moderate	
3	227.18	108.41	24629	Slight	
4	228.57	107.98	24681	Moderate	
5	229.35	109.34	25077	Slight	

DIMENSIONS AND TOLERANCES

Sl.No.	Dimensions obtained for 20 bricks(mm)		Acceptability as per IS 1077:1992, Clause 6.2(b)
1	Length	4625	4520 to 4680 mm
2	Width	2171	2160 to 2240 mm
3	Height	1393	1360 to 1440 mm

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